



NTSB National Transportation Safety Board

Office of Highway Safety

Introduction

David S. Rayburn

Investigative Team

- Mark Bagnard and Robert Accetta – Forensic mapping and accident reconstruction
- Dan Walsh – Highway factors
- Don Eick – Weather factors
- Jennifer Russert and Ken Suydam – Vehicle factors

Investigative Team, cont'd

- Burt Simon – Human performance
- Hank Hughes – Survival factors
- James LeBerte – Motor carrier operations
- David S. Rayburn - Investigator-in-Charge

Report Development Staff

- Christy Spangler – Graphics
- Debbie Stocker- Editor
- Mary Jones – Audiovisuals
- Rafael Marshall – Project manager

Parties to the Investigation

- Federal Highway Administration
- Connecticut DOT
- Connecticut State Police
- Yale University
- General Motors Corporation
- Freightliner Corporation

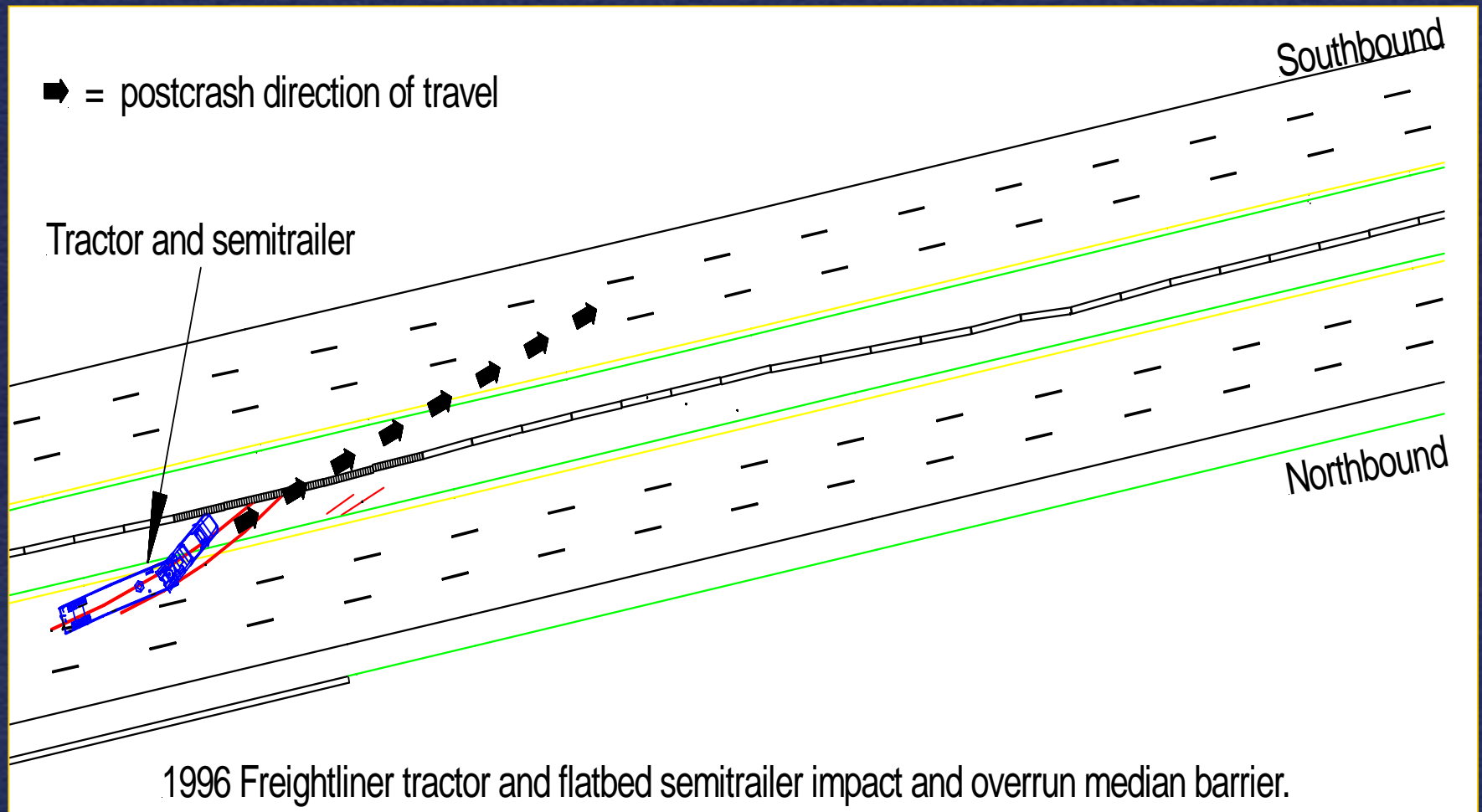
Parties to the Investigation, cont'd

- Arrow Trucking Company
- BH Trucking Company
- DMJM+Harris
- M. DeMatteo/Brunalli
- Fontaine Trailer Company

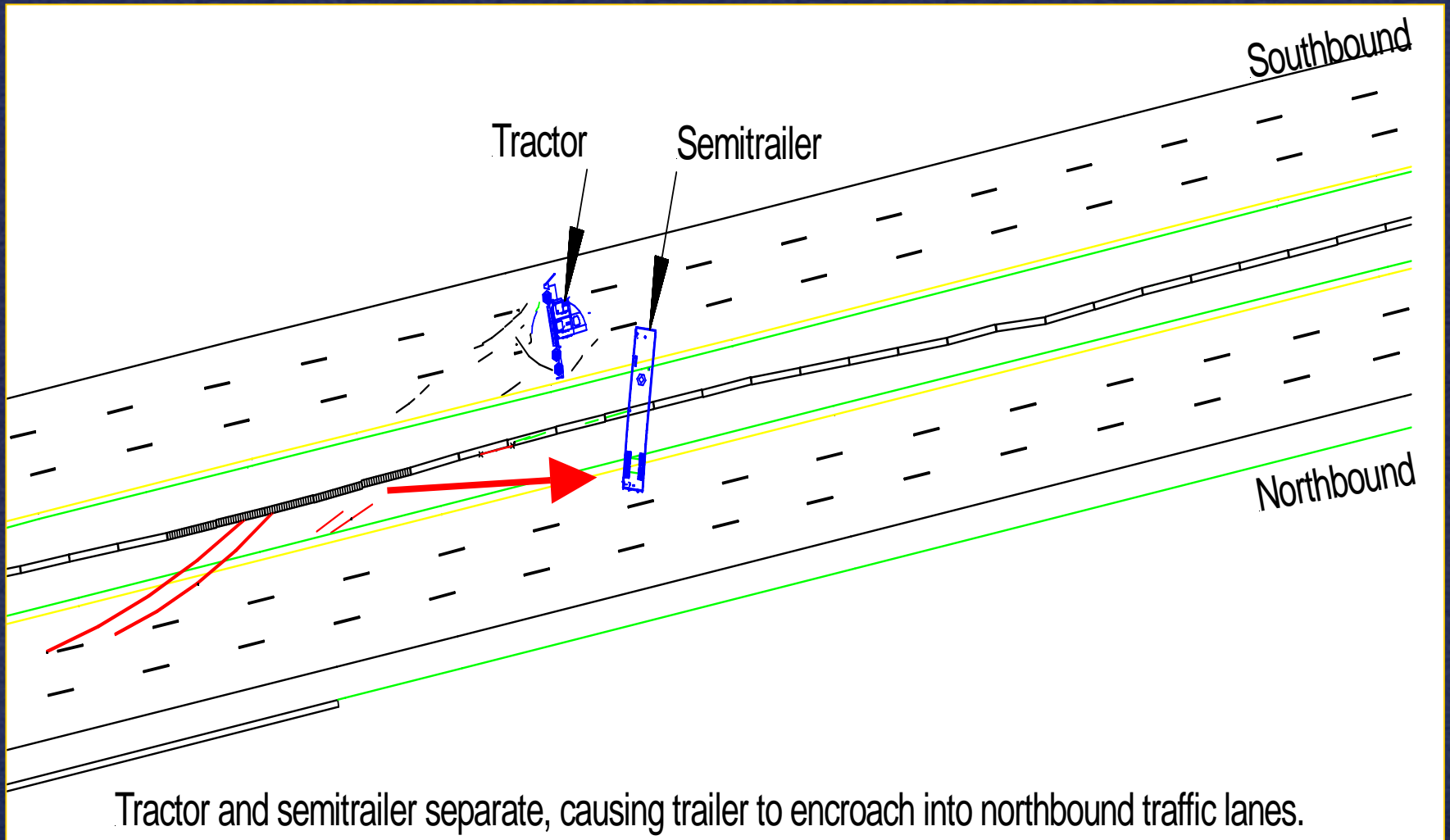
Safety Issues

- Adequacy of snow and ice treatment strategies
- Lack of specific guidance on use of high-performance median barriers
- Placement of portable concrete median barriers
- Need for primary seat belt laws for all seating positions

Collision Into Portable Barrier

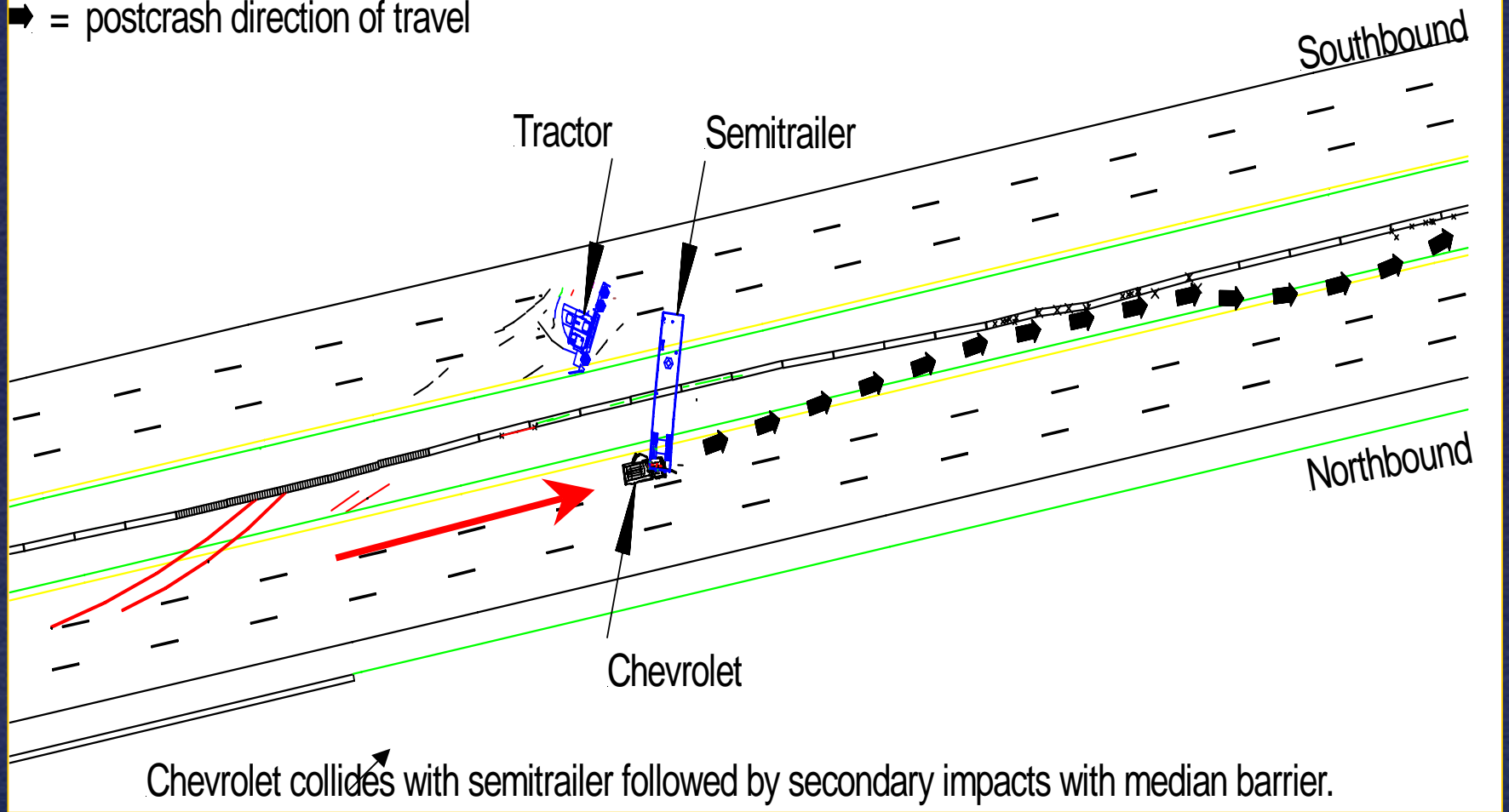


Final Rest of 1996 Freightliner



Final Rest of Chevrolet SUV

➡ = postcrash direction of travel





NTSB



NTSB National Transportation Safety Board

Office of Highway Safety

Human Performance

Burt Simon

Overview

- Driver experience
- Medical condition
- Driving conditions
- Fatigue
- Distraction

Driver Backgrounds

- Properly qualified, experienced, and licensed
- Good health
- Free of alcohol or drugs

1996 Freightliner Driver

- Loss of control due to ice on roadway
- Supported by
 - Several other early morning accidents
 - Witness statements
- Adequate rest prior to accident
- 4:50 a.m. accident due to speeds too fast for icy roadway

Chevrolet Driver

- No evidence of evasive maneuver before collision
- Factors examined
 - Visibility
 - Fatigue
 - Distraction





Fatigue and Distraction

- Driving at low point in circadian cycle
 - Microsleep
 - Reduced vigilance
- Awake for 18 hours prior to accident
- Possible distraction from crossover accident
- 5:01 a.m. accident due to combination of fatigue and distraction



NTSB



NTSB National Transportation Safety Board

Office of Highway Safety

Survival Factors and Occupant Restraint

Henry F. Hughes

Restraint Use

- Chevrolet equipped with 2 safety belts for front seats and 3 for rear seats
- Front – driver and passenger belted
- Rear – 4 passengers not belted
- Cargo area – 3 passengers unrestrained

1999 Chevrolet Tahoe



Connecticut State Seat Belt Law

- Requires:
 - *Front seat* occupants to be belted
 - Rear seat occupants under 16 to be secured in child safety seat or be belted
- Recent attempt to amend State safety belt regulation failed

Recommendation H-97-02

- Issued to all 50 States, territories, and Washington, D.C.
- Enact legislation for primary enforcement of mandatory seat belt use laws



NTSB



NTSB National Transportation Safety Board

Office of Highway Safety

Roadway Condition and Median Barrier

Dan Walsh

Summary

- Snow and ice guidelines
- Median barrier
- Incident management

Snow and Ice Guidelines

- ConnDOT *Snow and Ice Guidelines*
 - Address only 100 percent treatment coverage
 - Cannot be considered an LOS program
- Both FHWA and AASHTO advocate LOS programs
- Neighboring States of New York and Massachusetts have LOS programs

Snow and Ice Guidelines

- 7:2 mixture of sand and salt was not effective
- Straight salt is more effective in light-to-moderate snow and icy roadway conditions

Summary

- Snow and ice guidelines
- Median barrier
- Incident management

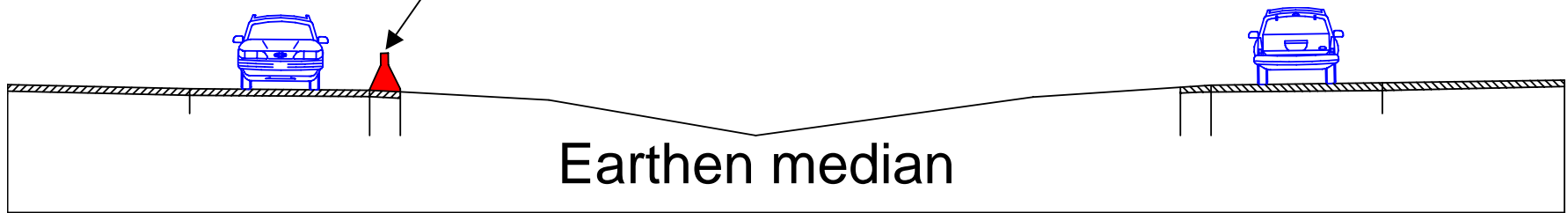
Median Barrier

I-95 construction project

- To eliminate grassy median
- To provide full shoulders
- To install a permanent concrete median barrier

Stage 1

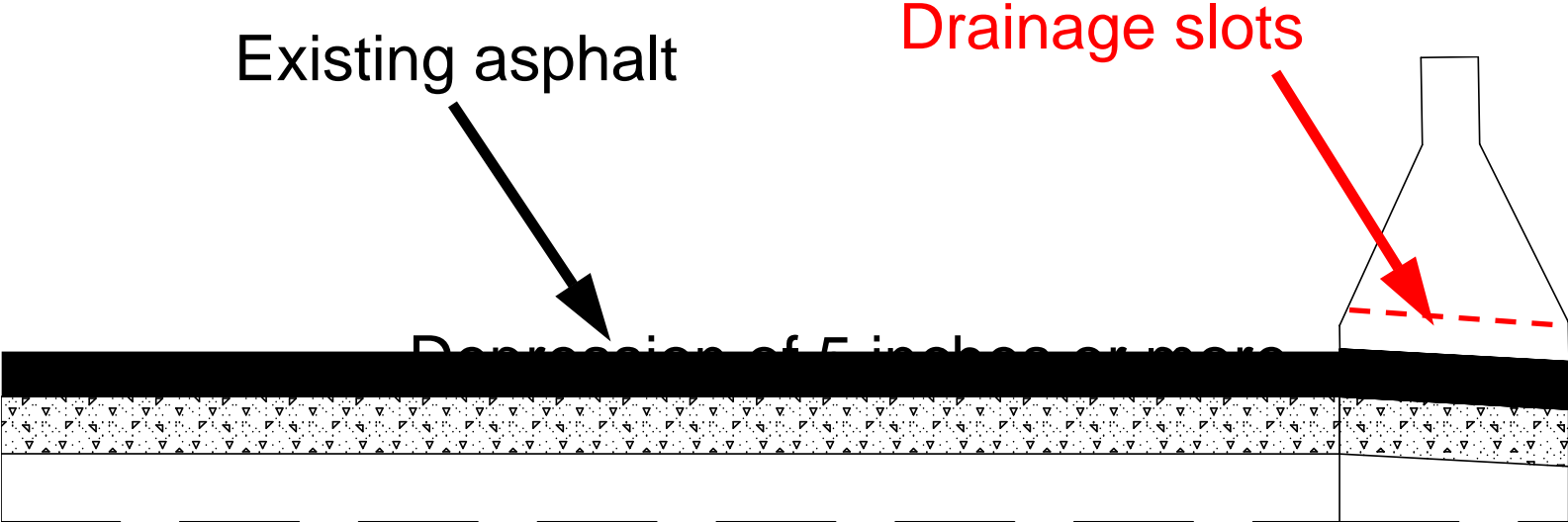
32-inch-high permanent
concrete barrier



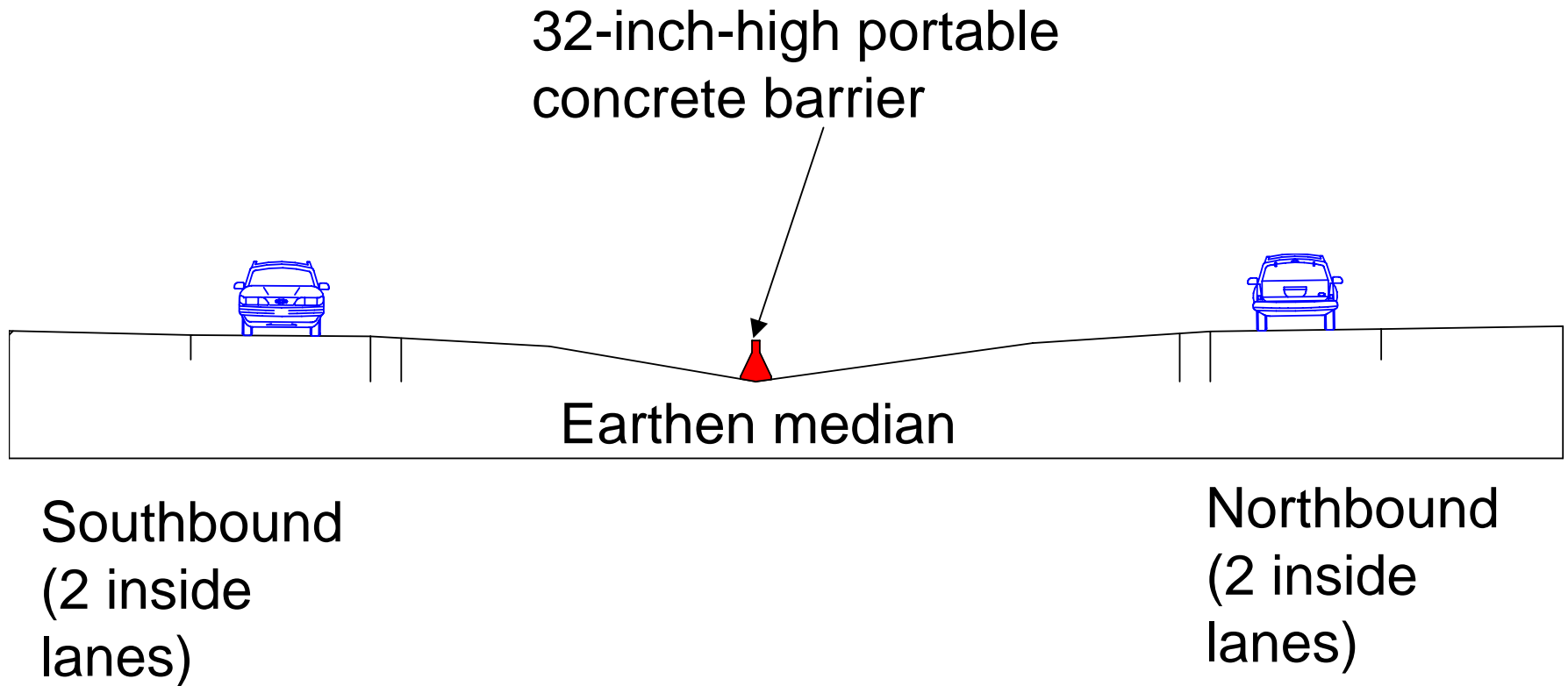
Southbound
(2 inside
lanes)

Northbound
(2 inside
lanes)

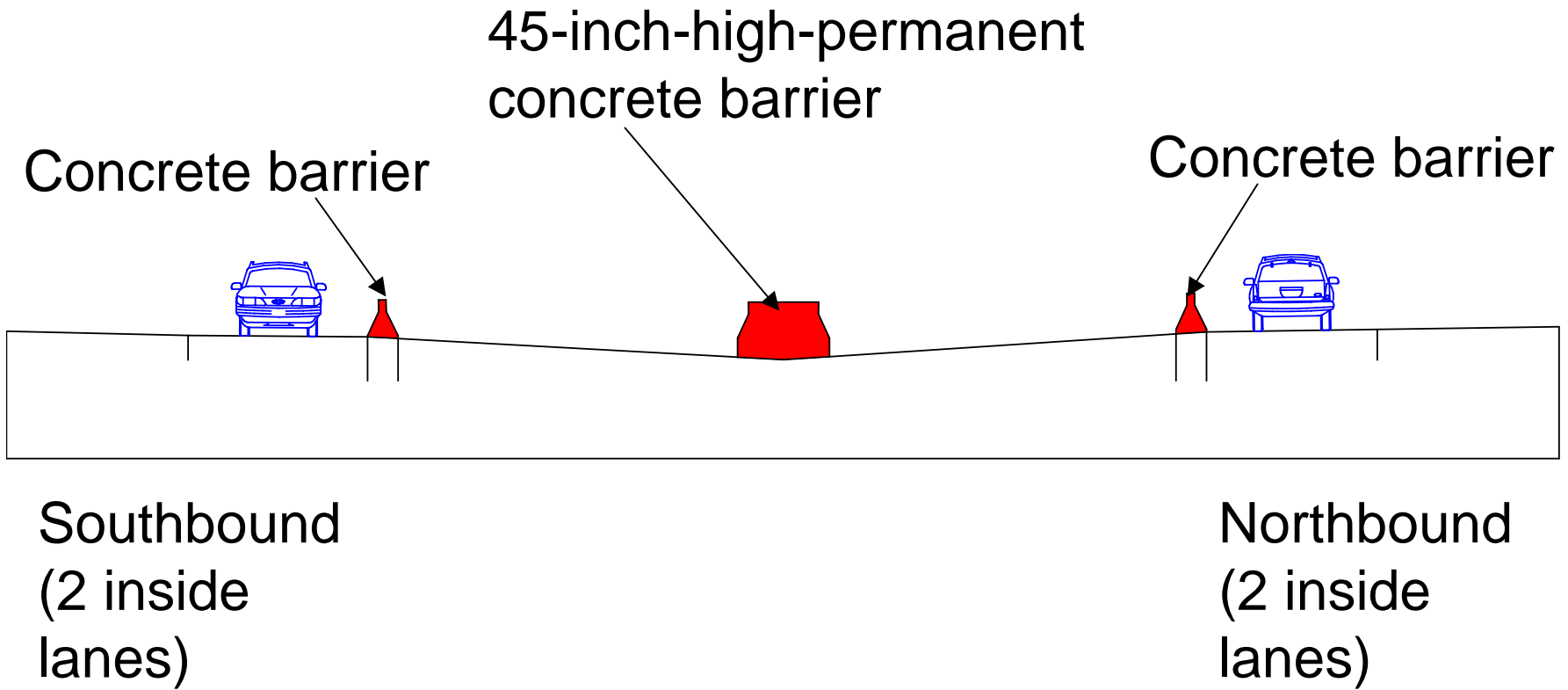
Detail of Median Barrier



Relocation of Median Barrier

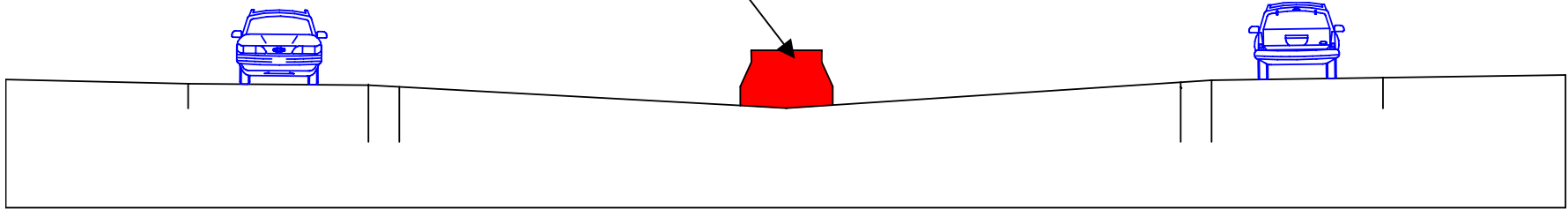


Stage 2



Stage 3

45-inch-high permanent
concrete barrier



Southbound
(2 inside
lanes)

Northbound
(2 inside
lanes)

Median Barrier

- Barrier was located on unpaved surface (a common practice for short periods of time)
- Barrier was not anchored to ground

Median Barrier

- FHWA
 - No impact tests for unpaved surfaces
 - Requires that barriers meet NCHRP Report 350 crash test guidelines
- Limited guidance in AASHTO *Roadside Design Guide*

Median Barrier

At issue

- Frictional properties of barrier
- Performance of barrier

Median Barrier

At issue

- Heavy trucks on I-95
- 32-inch standard barrier vs. 42-inch high-performance barrier

Median Barrier

AASHTO Roadside Design Guide

- Limited guidance
- Lacking specific warrants for high-performance barriers

Summary

- Snow and ice guidelines
- Median barrier
- Incident management

Incident Management

Earlier, 3:56 am, accident

- Vehicle overturned on I-95 north
- Connecticut State Police arranged 2 sets of flares in left lane
- Connecticut State Police cleared accident at 4:43 am

Incident Management

Connecticut State Police has no incident management policy

Incident Management

Manual on Uniform Traffic Control Devices (MUTCD)

- New chapter on incident management (Nov 2003)
- Focuses on moving traffic around an incident and reducing likelihood of secondary accidents



NTSB